



The Impact of Undercounting in the Current Population Survey

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Introduction and Key Findings

In earlier research, we established that the nation's most important survey of labor-market activity — the Current Population Survey (CPS) — may be systematically missing a large share of non-employed adults.¹ According to our estimates, based on a comparison of responses to the 2000 Decennial Census and corresponding months of the CPS, the undercounting of non-employed workers in the CPS raises the measured employment rate for adults in the CPS by about 1.4 percentage points. If our estimate is correct, the official employment rate for June 2006, for example, would have been 64.8 percent rather than the 66.2 percent reported by the BLS (2006: Table A-1). Since employment typically falls 1.5 to 2.0 percentage points in a recession, the magnitude of this measurement problem is of substantial economic significance.

In this paper, we provide additional estimates of the impact of undercounting in the CPS. For the most recent period where the analysis is possible, we produce estimates of the impact of the undercounting of the non-employed on national poverty rates and health-insurance coverage. More importantly, since the problems with undercounting appear to have become more severe over time, especially over the last decade, we also report simple estimates of the impact on employment rates of this deterioration in the representativeness of the CPS over time.

Our findings suggest that undercounting in the CPS has a substantial impact on our national measures of employment, poverty, and health-insurance coverage, and that the extent of the impact is likely to be growing over time.

- According to our earlier estimates, in 2000, the CPS appeared to miss about 1.4 percent of the adult population, or over 2.5 million non-working adults.
- If we assume that the non-workers who are not represented in the CPS have the same likelihood of being in poverty and have the same family structure as the non-working adults that do appear in the CPS, the official national estimate of poverty would have underestimated the actual number of adults and children in poverty by about 600,000 people (about 0.2 percentage points).
- If we assume that the non-workers who are not represented in the CPS have the same likelihood of being without health insurance and have the same family structure as the non-working adults that do appear in the CPS, the official national estimates of the population lacking health insurance coverage would have underestimated the number of adults and children without health insurance by about 350,000 people (about 0.1 percentage points).
- The impact on poverty estimates for blacks and Hispanics are proportionately much greater. In 2000, the CPS underreported the poverty rate for blacks by 0.5-0.7 percentage points and for Hispanics by about 0.4 percentage points.
- Since the undercounting has become more severe in the CPS in recent years, estimates of

¹ See Schmitt and Baker (2005, 2006).

employment rates from the CPS are biased and the bias is growing over time. For all adults, we estimate that the CPS overstated employment by about 1.1 percentage points in 1986, growing to 1.3 - 1.4 percentage points in 2000, and about 1.7 percentage points by 2005.

- The size and the increase over time in the bias in the CPS are largest for black men. We estimate that the CPS overstated black male employment by about 2.5 percentage points in 1986, rising to 3.0 percentage points in 2000, and reaching 3.5 percentage points in 2005.

Point-in-Time Estimates

In earlier research, we found that the most important sources of information on the US labor market — the monthly Current Population Survey — may be systematically missing several million non-employed adults. The first two columns of **Table 1** summarize our main findings,² based on a comparison of employment status from the CPS for March and April 2000 (which had a coverage rate³ of about 93 percent) and from the Decennial Census for 2000 (which had a coverage rate of about 99 percent). We concluded that the CPS overstated the adult employment rate relative to the Decennial Census by about 1.4 percentage points.⁴

The size of the bias in the CPS is not constant across demographic groups. The data in Table 1 show that the overstatement of employment rates is consistently larger for men than it is for women, and is larger for blacks and Hispanics than it is for whites. The undercount on non-employed adults — and, therefore, the overstatement of the employment-to-population rates — is largest for black men (3.0 percentage points), Hispanic men (1.6 percentage points), and black women (1.3 percentage points).⁵

The rest of Table 1 uses these estimates of missing adults to assess the impact on the calculation of the official national poverty rate. We illustrate the procedure used to calculate the size of the bias for

² See Schmitt and Baker (2005, 2006). For simplicity of presentation, the numbers here are for aggregated categories that don't appear in the original papers. Differences in rounding and aggregating these different categories produces an overall estimate of 1.3 percentage points, rather than the 1.4 percentage-point reported difference in the original papers. All tables can be found on pages 9-12.

³ The coverage rate is the ratio of the "...estimated population before post-stratification divided by the independent population control" (BLS 2002a). According to the BLS, "CPS undercoverage results from missed housing units and missed persons within sample households... ratio estimation to independent, age-sex-race-Hispanic population controls partially corrects for the bias due to undercoverage. However, biases exist in the estimates to the extent that missed persons in missed households or missed persons in interviewed households have different characteristics from those of interviewed persons in the same age-sex-race-origin-state group" (ibid).

⁴ These estimates exclude differences based on the broader coverage of the Decennial Census, which includes active-duty military personnel and the institutionalized population, both of which are, in principle, excluded from the CPS. The employment rate gap between the CPS and the Decennial Census due solely to the difference in the universe covered was about 0.9 percentage points, over and above the 1.4 percentage-point difference mentioned here. Our estimated gap between the CPS and the Decennial Census corrects for self-reported labor-market-status response errors in the Decennial Census using a procedure described in Schmitt and Baker (2005).

⁵ The more detailed demographic breakdowns in our earlier paper (Schmitt and Baker, 2006) show that within these aggregated race and gender groups in Table 1, the bias was largest for younger adults. In fact, the group with the biggest overstatement of employment was younger Hispanic women. In Table 1, the smaller biases for older Hispanic women mute the bias for Hispanic women overall.

national poverty rates using the overall population figures in the first row of the table. As a benchmark, we start with the share and the number of adults (ages 16 and over) in poverty in 2000. The third and fourth columns of the table show that, according to the CPS, about 10.2 percent of the adult population (about 21.4 million adults) were in poverty in 2000.⁶ We then calculated the poverty rates separately for employed and non-employed adults that participated in the CPS (columns five and six). According to the CPS, the poverty rate for employed adult respondents was 5.7 percent; the poverty rate for non-employed adult respondents was 18.3 percent. Next, we applied the poverty rate for non-employed workers in the CPS to our estimate of excluded non-employed workers and added these additional poor adults (345,000) into the total adult poor population (see column 8).⁷ Since some of these non-employed adults have children, and children in their households would also be poor, we used the CPS data to estimate the average number of children in non-working, adult, poor households, applied this average to the 345,000 adults, and added the additional children (259,000) into the total population (see column 10). The last column of the table combines the estimated number of excluded non-working poor adults and their children (604,000). These additional 604,000 adults and children in poverty — who were not represented in the CPS in 2000 — would have raised the official poverty rate, by our simple calculation, about 0.2 percentage points (see the next-to-last column).

The remaining rows of the table present results of similar calculations for the aggregate race and gender groups. Using this simple methodology, we estimate that the official national poverty rate for blacks was 0.5 to 0.7 percentage points lower than it would have been if the CPS had included uncovered non-working adults. The effect is slightly higher for black men (0.6 percentage points) than it is for black women (0.5 percentage points). For Hispanics, the CPS appears to understate poverty rates about 0.4 percentage points. The implied effects for child poverty rates are 0.8 to 0.9 percentage points for both blacks and Hispanics.

In **Table 2**, we employed a similar methodology to estimate the impact of the inactivity bias in the CPS on national health-insurance coverage rates. Overall, we find that the CPS undercount of non-employed adults in 2000 led the survey to miss about 350,000 uninsured adults and children, which would have raised the non-coverage rate about 0.1 percentage point in the same year. The effect was biggest for black men, whose non-coverage rate would have been about 0.3 percentage points higher if the non-working adults had appeared in the CPS.

⁶ We calculated poverty rates using by applying the official definition to the March 2001 CPS, which covers income received during the calendar year 2000.

⁷ To be more precise, we multiplied the 2.7 million non-working adults by $(0.183 - 0.057)$, where 0.183 is the poverty rate for non-employed adults in the CPS and 0.057 is the poverty rate for employed adults in the CPS, and added the result, 345,000 adults into the total poor population.

Estimates of Changes over Time

The preceding estimates for 2000 raise concerns about the accuracy of employment, poverty, and health-insurance rates at any particular point in time, especially for demographic groups with lower-than-average coverage rates in the CPS. If CPS coverage rates were relatively constant over time, the coverage-rate problems in the CPS would probably not have an important effect on estimates of changes in employment, poverty, and health-insurance rates over time. Estimates at any point in time would be biased (upward in the case of employment, and downward in the cases of poverty and non-coverage rates for health insurance), but since the degree of bias over time would likely be roughly constant, estimates of changes in these rates over time would likely be fine.

Unfortunately, as **Table 3** demonstrates, coverage rates have been falling in the CPS at least since the mid-1980s. In 1986, for example, the overall coverage rate of the CPS was 93.0 percent; by 2000, the rate had fallen to 92.0; by 2005, to 89.7 percent.⁸ For some groups, the decline in coverage rates was much larger. In particular, for black men, coverage fell from about 83 percent in the mid-1980s, to about 80 percent in 2000, and then to about 76 percent in 2005. For black women, the decline in coverage rates was about the same in percentage-point terms, from between 90 and 91 percent in the mid-1980s, to 86 percent in 2000, to about 83 percent in 2005.

Meanwhile, for Hispanics, coverage rates have fluctuated substantially. The coverage rate for Hispanic men was only 77 percent in 1986, rising sharply to about 84 percent in 1999 and again to over 90 percent in 2000, before declining sharply to between 80 and 83 percent in the three years ending in 2005. For Hispanic women, coverage rates were about 82 percent in 1986, increasing sharply to about 86 percent in 1995, increasing again to about 90 percent in 2000, then dipped, and finally rebounded to about 91 percent in 2005.

Declining coverage rates in the CPS may be related to rising nonresponse and refusal rates in the CPS. Nonresponse refers to cases where “...households that are eligible for interview are not interviewed for some reason: a respondent refuses to participate in the survey, is incapable of completing the interview, or is not available or not contacted by the interviewer during the survey period, perhaps due to work schedules or vacation.” (BLS, 2002b: 15-4 – 15-5) As implied, refusals are a subset of nonresponses⁹ and refer to cases where the interviewer contacts the eligible interviewee, but the eligible interviewee declines to participate in the survey. In 1984, the monthly nonresponse rate was between 4.5 and 5.0 percent; by 1996, monthly nonresponse fluctuated between 5.8 and 8.0 percent; and, by 2004 (through September), nonresponse had increased to between 7.5 and 8.8 percent.¹⁰ Refusal rates also show an increase over time. In 1984, between 2.4 and 3.1 percent of respondents declined to participate in the survey; by 1996, the share had increased to between 3.5 and 5.0 percent, approximately the range where it remained in 2004

⁸ The figure for 1986 refers to March; figures for the other years are year-round averages. Recent coverage data for the CPS show no obvious seasonal pattern, so we compare the March data from 1986 with the year-round averages for the later years. Our analysis does not change substantially if we use only March data for each year.

⁹ The BLS refers to nonresponse of this type as “Type A Noninterviews.”

¹⁰ The data are approximations read from published figures; for 1984 and 1996, from BLS (2002b: Figure 16-2); data for 2004, from BLS (2004).

(through September).¹¹

Table 4 uses the data from Table 3 on the decline in coverage rates between the mid-1980s and the mid-2000s to estimate the change over the same period in the size of the noncoverage bias on employment rates. We employ a simple method to estimate the size of the bias, conditional on the coverage rate. First, we use the data we have for 2000 from both the CPS and the Census to calculate the implied employment rate of nonrespondents to the CPS. We then apply this implied employment rate to nonrespondents in 1986 (the earliest year for which we have coverage data) and 2005 (the most recent year), and effectively “add” the nonrespondents back into the CPS survey for purposes of calculating a new total employment rate that reflects the (weighted) average of the experience of respondents and nonrespondents to the survey. The methodology is simple, but allows us to generate a rough idea of the change over time in the impact of noncoverage rates on estimates of employment rates in the CPS.

The first five columns of Table 4 illustrate the procedure we followed for the data for 2000. The first row shows the results for all adults. The CPS response rate in 2000 (column one) was about 92.0 percent. According to the CPS, the employment rate for all adults in that year was 64.5 percent (column two), about 1.3 percentage points higher than the employment rate¹² in the corresponding Decennial Census (63.2 percent). If the CPS employment rate, with a 92 percent response rate, was 64.5 percent, and the Decennial Census rate, with a 99 percent response rate, was 63.2 percent, this implies that the employment rate of the group excluded from the CPS, but included in the Decennial Census, was 48.2 percent (column

FIGURE 1
Estimated Overstatement of Employment,
All Adults, 1986-2005 (percentage points)

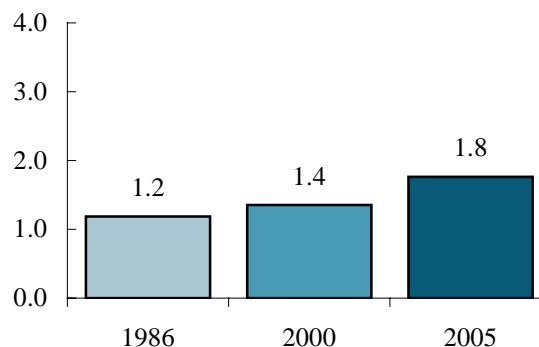


FIGURE 2
Estimated Overstatement of Employment,
White Men, 1986-2005 (percentage points)

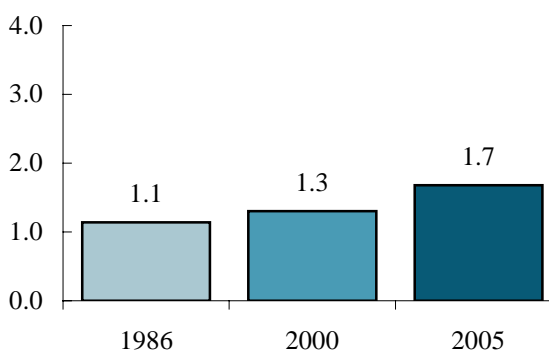
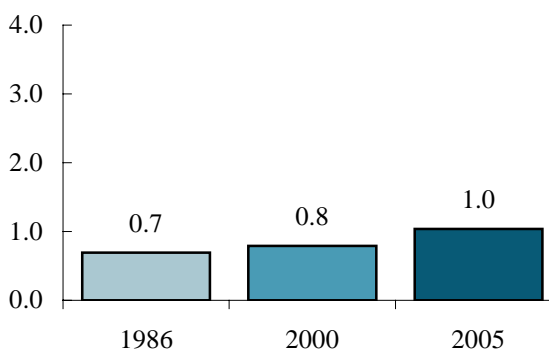


FIGURE 3
Estimated Overstatement of Employment,
White Women, 1986-2005 (percentage points)



¹¹ Ibid. Harris-Kojetin and Tucker (1999) analyzed some of the determinants of monthly refusal rates between 1960 and 1988; Atrostic, Bates, Burt, and Silberstein (2001) studied nonresponse rates in the CPS and five other government surveys in the 1990s.

¹² The employment rate in Table 4 refers to the civilian, noninstitutional population and is corrected for self-reporting error.

four). The remaining rows of the table produce similar calculations for the other demographic groups we examined earlier.

The remainder of the columns in the table give the CPS response rate in 1986 and 2005 with the corresponding estimates of the CPS overstatement — under the assumption that nonrespondents had the same employment rate in 1986 and 2005 as was implied in the simple calculation for 2000. Figures 1 through 6 summarize those results. **Figure 1** shows the estimated size of the noncoverage bias on the employment rate for all adults. According to the procedure employed here, the CPS overstated employment relative to its “true” level by about 1.1 percentage points in 1986. The one-percentage-point decline in coverage between 1986 (from 93.0 to 92.0 percent) raised the size of the bias to 1.3 percentage points. The further drop in coverage rates to 89.7 percent in 2005, increased the bias to 1.7 percentage points. **Figures 2 and 3** demonstrate that the bias is slightly larger for white men than white women, and has increased roughly in line with the overall trend.

Figure 4 shows results for black men. The estimated bias is large in all three years, and increases sharply between 1986 (2.5 percentage points) and 2005 (3.5 percentage points), as the coverage rate for this group falls from about 83.0 percent to just 76.1 percent. **Figure 5** presents the corresponding estimates for black women. The size of the bias is smaller, but the increase in the size of the bias between 1986 and 2005 (0.7 percentage points) is slightly larger than the overall increase (0.6 percentage points).

The trends for Hispanics differ from the experiences for all adults and those of blacks. For Hispanic men (see **Figure 6**), the bias was largest in 1986, when the CPS coverage rate for the group was only 77.0 percent. The bias fell to 1.6 percentage points, however, as their CPS coverage rate increased to 90.7 percent. The

FIGURE 4
Estimated Overstatement of Employment, Black Men, 1986-2005 (percentage points)

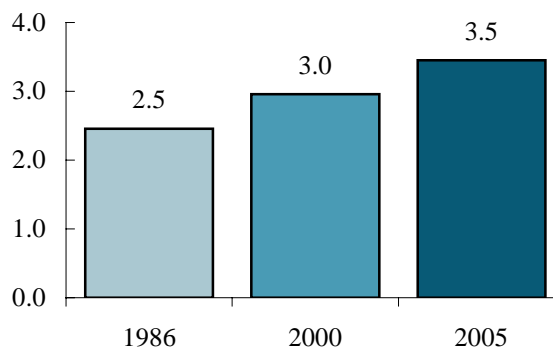


FIGURE 5
Estimated Overstatement of Employment, Black Women, 1986-2005 (percentage points)

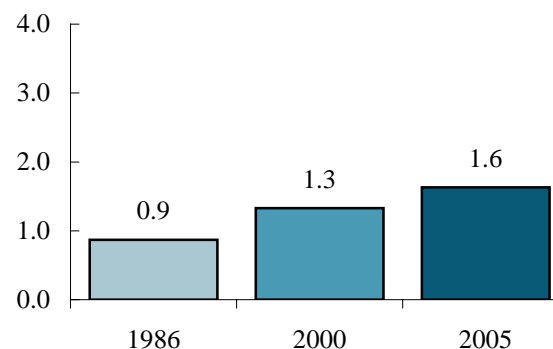
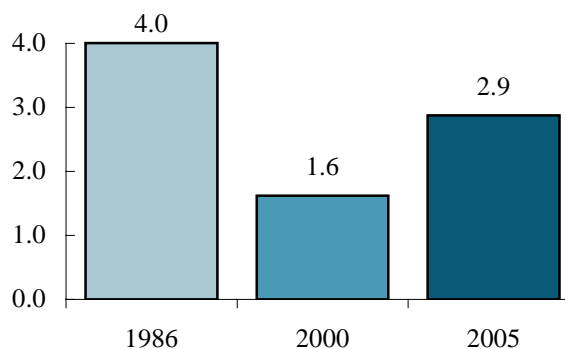
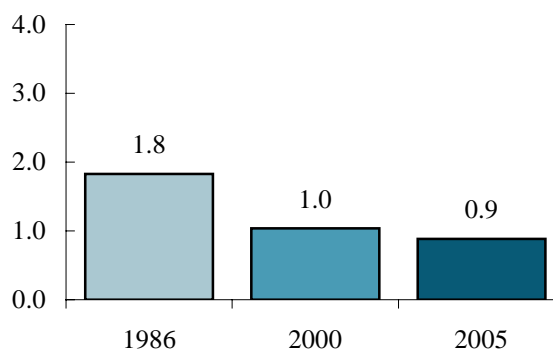


FIGURE 6
Estimated Overstatement of Employment, Hispanic Men, 1986-2005 (percentage points)



bias increased to 2.9 percentage points in 2005, when the coverage rate dropped to 83.5 percent. For Hispanic women (see **Figure 7**), the estimated size of the bias fell steadily, from 1.8 percentage points in 1986 to 0.9 percentage points in 2005, reflecting the steady improvement in CPS coverage rates for Hispanic women (from 82.0 percent in 1986, to 89.8 percent in 2000, to 91.3 percent in 2005).

FIGURE 7
Estimated Overstatement of Employment,
Hispanic Women, 1986-2005 (percentage points)



Conclusion

Non-participants in the CPS appear to have a substantially lower employment rate than CPS participants. As a result, the CPS systematically overstates employment rates of the adult population. Our estimates suggest that in 2000, the CPS overstated the adult employment rate 1.3 to 1.4 percentage points. Since non-employed adults are more likely to be poor and less likely to have health insurance, the CPS failure to capture a large group of non-working adults also leads to undercounting the poor and those without health insurance. Simple calculations suggest that the 1.3 to 1.4 percentage point bias in the CPS employment rates corresponds to missing about 600,000 people in poverty and 350,000 people without health insurance.

The bias in the CPS is of particular concern because it appears to be getting worse over time. The coverage rate of the CPS has been declining since the mid-1980s, particularly for black men. As a result, the degree to which the CPS overstates employment has almost certainly increased. For the population as a whole, our calculations suggest that the CPS bias was about 1.1 percentage points in 1986, but rose to 1.7 percentage points in 2005. For black men, the group that has seen the biggest drop in coverage rates, the bias has increased from 2.5 percentage points in 1986 to 3.5 percentage points in 2005.

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Tables

TABLE 1
Impact of Missing Non-Employed Workers on Measured Poverty, 16 and Older, 2000

	Missing non-emp.		In poverty		Poverty rate (%)		Missed adult poor		Missed children		Total change	
	Percent of pop.	Thous.	Percent of pop.	Thous.	Emp.	Non-emp.	Percent of pop.	Thous.	Percent of pop.	Thous.	Percent of pop.	Thous.
All	1.3	2,733	10.2	21,382	5.7	18.3	0.2	345	0.4	259	0.2	604
White male	1.4	1,045	6.3	4,846	3.7	12.9	0.1	97	0.2	46	0.1	143
White female	0.8	645	8.7	7,127	4.9	14.2	0.1	60	0.2	37	0.1	97
Black male	3.0	327	14.3	1,577	6.7	27.2	0.6	67	0.8	40	0.7	107
Black female	1.3	179	23.8	3,210	13.1	39.4	0.4	47	0.8	41	0.5	89
Hisp. male	1.6	134	16.8	1,390	13.3	28.5	0.2	20	0.8	24	0.4	44
Hisp. female	1.0	87	23.7	1,980	13.0	34.7	0.2	19	0.9	27	0.4	46

Notes: Authors' calculations from Census PUMS, CPS ORG, and March CPS. First two columns are based on methodology described in Baker and Schmitt (2006), Table 4. Poverty rates and number of children by demographic groups and employment status from March CPS.

TABLE 2**Impact of missing Non-Employed Workers on Estimated Population without any Form of Health-Insurance, 20 to 64, 2000**

	Missing non-emp.		No health ins. (all)		No health ins. (%)		Missed adults		Missed children		Total change	
	Percent of pop.	Thous.	Percent of pop.	Thous.	Emp.	Non-emp.	Percent of pop.	Thous.	Percent of pop.	Thous.	Percent of pop.	Thous.
All	1.2	2,324	17.4	33,701	15.5	24.1	0.1	199	0.2	149	0.1	349
White male	0.7	494	14.2	10,130	12.9	22.0	0.1	45	0.1	21	0.1	66
White female	0.6	472	12.5	9,513	10.8	16.9	0.0	29	0.1	17	0.1	46
Black male	3.0	295	25.8	2,542	23.4	33.6	0.3	30	0.4	18	0.3	48
Black female	0.9	112	21.4	2,634	18.5	28.3	0.1	11	0.2	10	0.1	21
Hisp. male	3.4	251	45.2	3,393	45.1	47.8	0.1	7	0.3	8	0.1	15
Hisp. female	-0.2	-14	36.9	2,815	31.7	44.2	0.0	-2	-0.1	-3	0.0	-4

Notes: Authors' calculations from Census PUMS, CPS ORG, and March CPS. First two columns are based on methodology described in Baker and Schmitt (2006), Table 4. Poverty rates and number of children by demographic groups and employment status from March CPS.

TABLE 3
Selected CPS Coverage Rates, 1984-2006

	Total	Male	Female	White Male	White Female	Black Male	Black Female	Hispanic Male	Hispanic Female
1984	--	--	--	--	--	0.835	0.901	--	--
1985	--	--	--	--	--	--	--	--	--
1986	0.930	--	--	0.930	0.950	0.830	0.910	0.770	0.820
1987	--	--	--	--	--	--	--	--	--
1988	--	--	--	--	--	--	--	--	--
1989	--	--	--	--	--	--	--	--	--
1990	--	--	--	--	--	--	--	--	--
1991	0.930	--	--	--	--	--	--	--	--
1992	0.928	--	--	--	--	--	--	--	--
1993	0.918	--	--	--	--	--	--	--	--
1994	0.918	0.894	0.940	0.901	0.939	0.767	0.870	0.757	0.836
1995	0.923	0.901	0.942	0.900	0.937	0.755	0.852	0.780	0.861
1996	0.923	0.901	0.943	0.917	0.952	0.771	0.875	0.740	0.882
1997	0.918	0.899	0.938	0.913	0.948	0.773	0.873	0.776	0.873
1998	0.914	0.896	0.932	0.911	0.944	0.763	0.856	0.780	0.861
1999	0.912	0.898	0.926	0.915	0.940	0.766	0.847	0.837	0.850
2000	0.920	0.907	0.932	0.920	0.943	0.795	0.862	0.907	0.898
2001	0.913	0.899	0.926	0.910	0.932	0.801	0.877	0.901	0.902
2002	0.907	0.893	0.921	0.906	0.929	0.790	0.863	0.891	0.894
2003	0.885	0.875	0.896	0.884	0.908	0.780	0.851	0.806	0.871
2004	0.889	0.875	0.904	0.888	0.916	0.770	0.840	0.819	0.895
2005	0.897	0.882	0.912	0.896	0.925	0.761	0.832	0.835	0.913

1984: Data are for March. Commission on Behavioral and Social Sciences and Education.

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1986: Office of Management and Budget, Federal Committee on Statistical Methodology, Statistical Policy Working Paper No. 17 --Survey Coverage April 1990, Tables 14 and 15, (<http://www.fcsm.gov/working-papers/wp17.html>).

1991-1996 (total): Fred Meier and Thomas Moore, US Bureau of Census, "The Effect of Screening on Coverage in the National Health Interview Survey," 1999, Table 4, (http://www.amstat.org/sections/srms/proceedings/papers/1999_098.pdf).

1994-2005 (except 1994-1996 total): unpublished data from the Census Bureau, supplied by Lawrence Mishel, Economic Policy Institute.

1997-2005 (total): calculated as simple average of male and female coverage rates.

TABLE 4
Estimated Effect of CPS Overcount of Employed on Employment-to-Population Rates, 1986-2005

	2000					1986		2005	
	Employment rate					CPS response rate	Estimated CPS over- statement	CPS response rate	Estimated correction factor
	CPS response rate	CPS (actual)	Census (corrected)	CPS Non- respond. (implied)	Estimated CPS over- statement				
All	0.920	64.5	63.2	48.2	1.3	0.930	1.1	0.897	1.7
White men	0.920	72.0	70.6	55.0	1.4	0.930	1.2	0.896	1.8
White women	0.943	58.7	57.9	44.9	0.8	0.950	0.7	0.925	1.0
Black men	0.795	63.1	60.1	48.7	3.0	0.830	2.5	0.761	3.5
Black women	0.862	59.0	57.6	49.3	1.3	0.910	0.9	0.831	1.6
Hispanic men	0.907	77.1	75.4	59.6	1.6	0.770	4.0	0.835	2.9
Hispanic women	0.898	52.7	51.7	42.6	1.0	0.820	1.8	0.913	0.9

Notes: Authors' analysis of Census and CPS data; for coverage rates, see Table 3.